Invasive pathogens and pests may threaten a multipurpose tree species: the European chestnut as a case study

UNIVERSITÀ DEGLI STUDI DI TORINO

How invasive pathogens and pests may threaten a multipurpose tree species: the European chestnut as a case study

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Keywords: *Cryphonectria parasitica*, *Dryocosmus kuriphilus*, *Gnomoniopsis castanea*, impact, *Phytophthora*

The European chestnut (*Castanea sativa*) is a multipurpose tree species valued for nuts, timber, tannins, hydrogeological protection and landscape. It has long been serving as a substitute of cereals and as a main source of carbohydrates and firewood (fuel) for people living in mountain areas of southern Europe. In this paper we show how invasive pathogens and pests of chestnut accidentally introduced or of unknown origin have significantly impacted the rural economy, and we propose that tree decline currently observed in several coppices and orchards may be the result of interaction amongst them, possibly within the frame of changing socio-economic and climatic conditions. Ink disease caused by the oomycetes *Phytophthora* spp. and chestnut blight due to the fungal pathogen *Cryphonectria parasitica* spread epidemically since the mid-1800s and first half of 1900s, respectively, threatening the survival of the European chestnut. The recent introduction and invasion of the oriental chestnut gall wasp *Dryocosmus kuriphilus* and the newly described nut rot caused by the fungus *Gnomoniopsis castanea*, which may locally decrease nut production by 80%, are regarded as two important additional factors leading to the abandonment of chestnut stands. Actual social consequences under an economic, cultural and political perspective will be discussed.